

## Fire Protection System of ESS Container

### 1. Introduction

This document describes the layout and the control logic of various fire protection systems in the ESS container (Hithium ∞Block L5015-0.5P V2.0).

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### 2. Layout and Descriptions

The fire protection system is designed following the NFPA855 installation standard for stationary energy storage system.

The fire protection system includes FACP (Fire alarm control panel), automatic alarm system, ventilation system, aerosol fire extinguishing system and water spray system (Optional).

The ESS container enclosure plates are three-layer structure composed of double steel plate and fireproof rock wool, and the fire resistance rating is greater than 1h.

The interior and exterior decoration materials are all flame retardant materials, and the fire protection grade of the materials is UL94-V0. The combustible gas concentration reduction system is provided with a minimum of 2 hours of standby power according to NFPA 855-2023 section 9.6.5.6.7 (3). The gas detection system is provided with a minimum of 24 hours of standby power and 2 hours in alarm according to NFPA 855-2023 section 9.6.5.6.7 (4).

A secondary power supply is provided for smoke and fire detection systems in accordance with NFPA 72 capable of 24 hours in standby and 2 hours in alarm according to NFPA 855-2023 section 4.8.3.

Table2-1 Introduction of fire protection system button

No.	Item	Quantity	Function
1	Ventilation system emergency start/stop button	1	Manually Start or Stop the Fan.
2	Manual Pull Station	1	When a fire has occurred, aerosol can be manually released.
3	Abort Switch	1	During the delay release period, it can abort the execution of the firefighting operation.
4	Disablement Switch	1	During maintenance period, disconnect the aerosol release circuit to prevent accidental aerosol release.

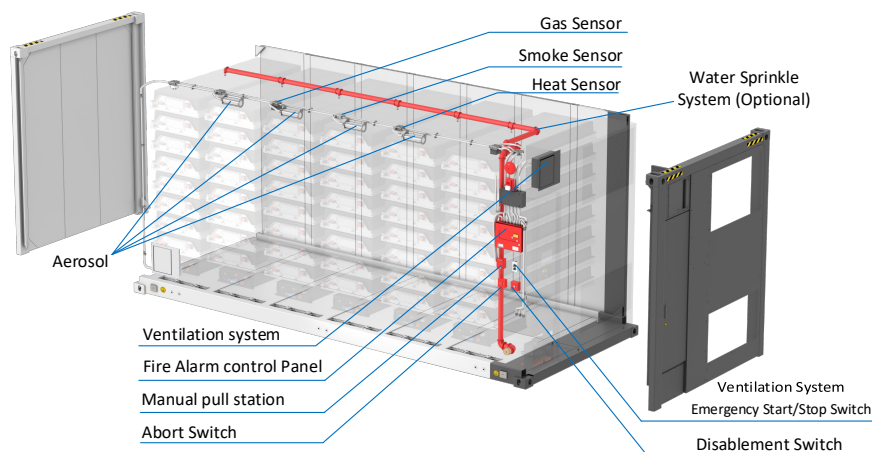


Fig2-1 Fire Protection System

## 2.1. Automatic Alarm System

The automatic alarm system is mainly composed of FACP, heat detector, smoke detector, alarm bell, horn/strobe, disablement switch, abort switch and manual pull station.

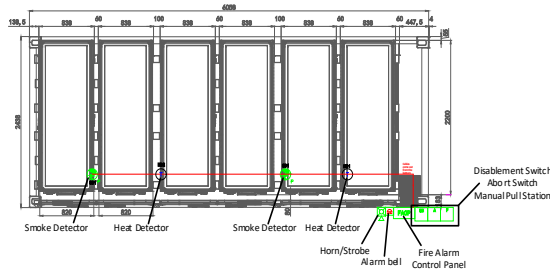


Fig2-2 Automatic Alarm System

## 2.2. Ventilation System

The ventilation system mainly consists of combustible gas detector, fan controller, air inlet electric shutter and exhaust fan.

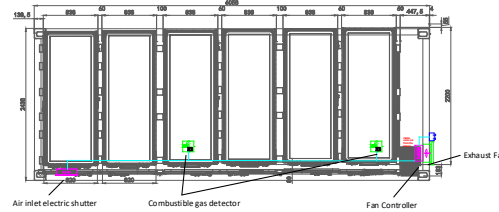


Fig2-3 Air Inlet and Exhaust System

## 2.3. Aerosol Fire Extinguishing System

The aerosol fire extinguishing system is mainly composed of 4 aerosols.

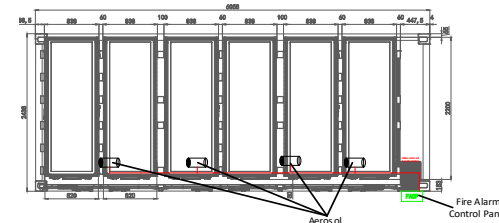


Fig2-4 Aerosol Fire Extinguishing System

## 2.4. Water Spray System

The water spray system is mainly composed of sprinklers and pipes.

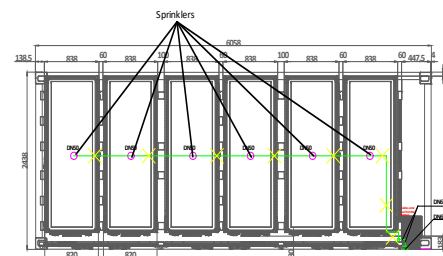


Fig2-5 Water Spray System

DN65 quick connector shall be reserved for connecting outdoor fire hydrant or fire truck.

## 2.5. Fire Protection System Diagram

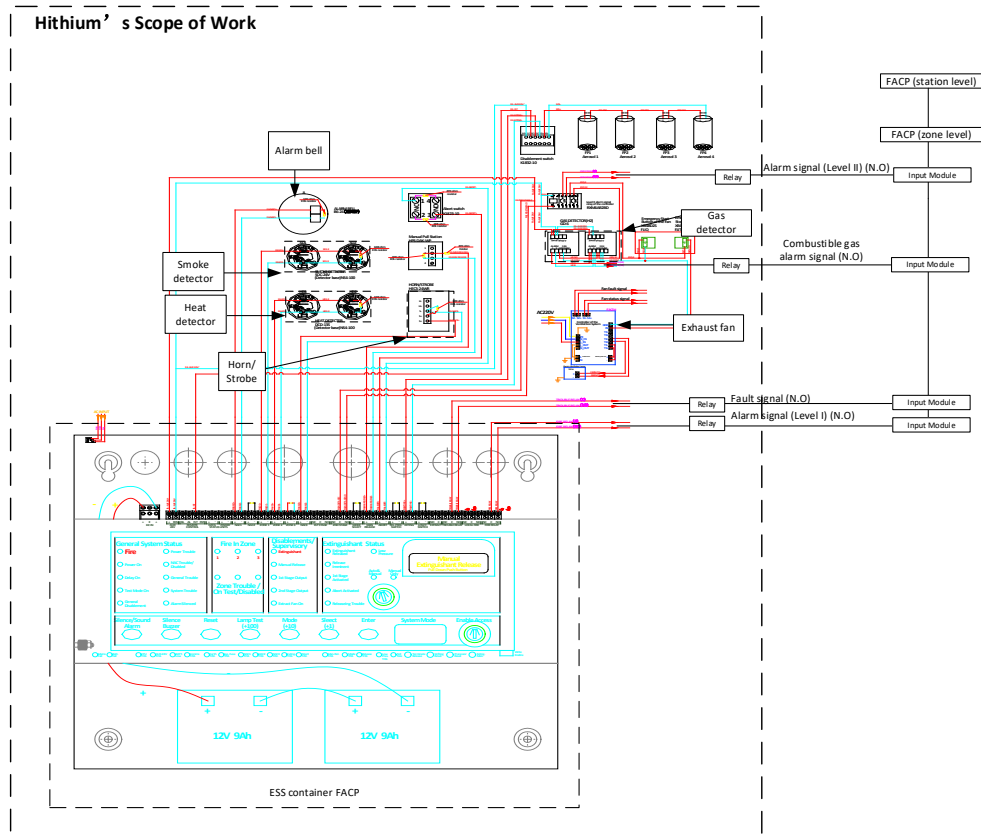
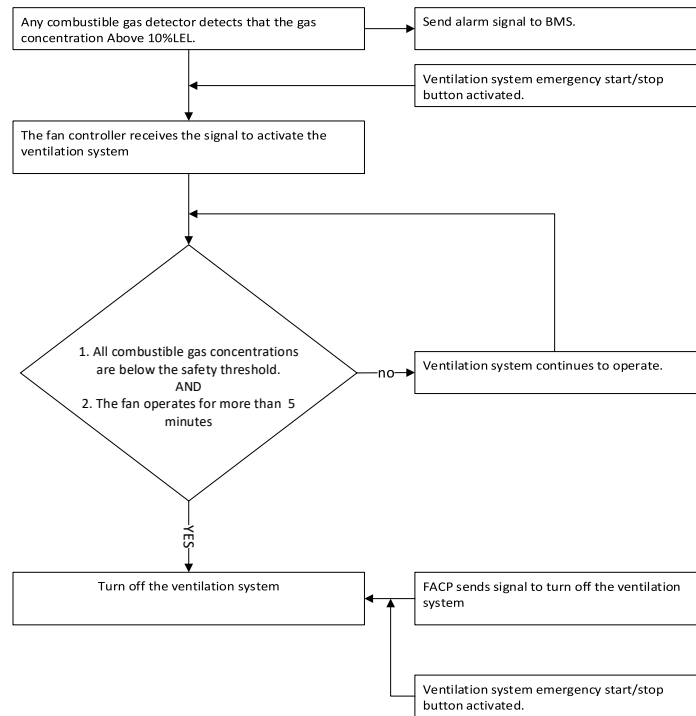


Fig2-6 Fire Protection System Diagram

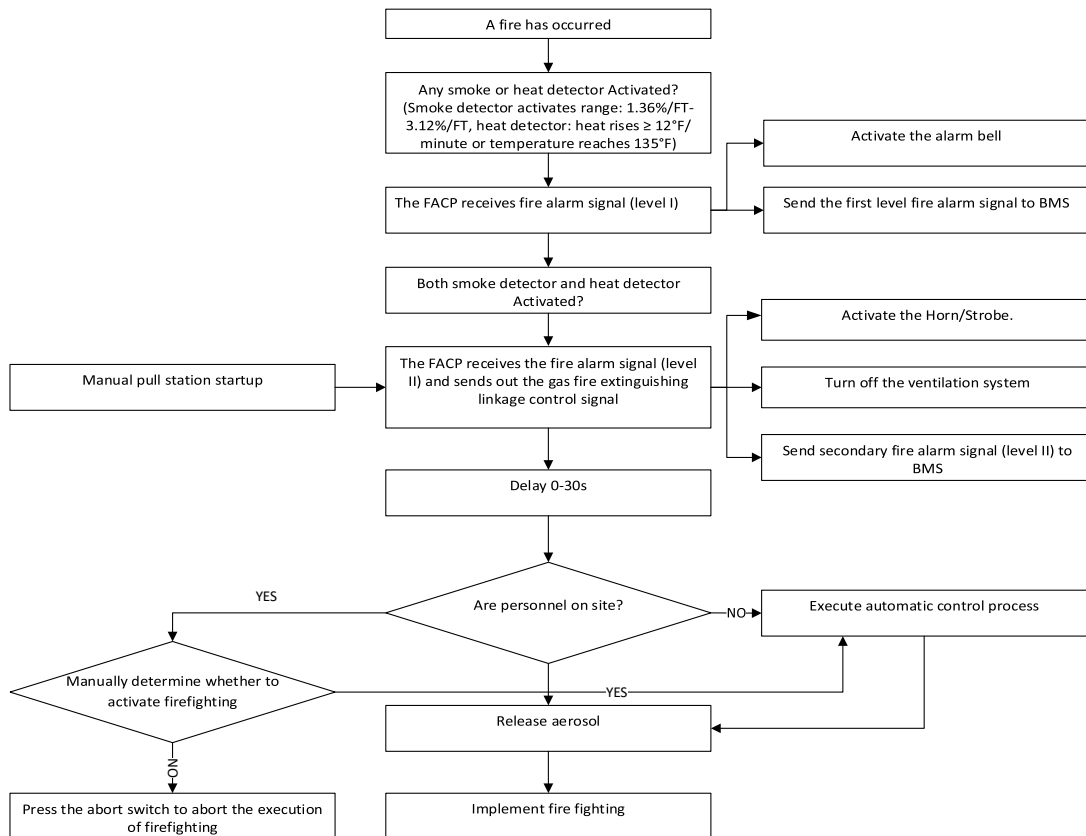
As shown above, four of dry contact output signals will be exported from the ESS fire protection system, which include Alarm signal (level I), Alarm signal (level II), Fault signal and Combustible gas alarm signal. These four signals shall be transmitted to the input modules in the ESS container, and then connects to the station level FACP/zone level FACP (for large projects) for communications.

### 3. Control Logic of Fire Extinguishing Process

#### 3.1. Control Logic of Air Inlet and Exhaust System



#### 3.2. Control Logic of Automatic Fire Protection System



#### 4. Configuration List

No	Item	Unit	Quantity	Compliance
1	Fire alarm control panel	pcs	1	UL 864
2	Battery	pcs	2	UL 1989
3	Smoke detector	pcs	2	UL 268
4	Heat detector	pcs	2	UL 521
5	Detector base	pcs	4	UL 521
6	Abort switch	pcs	1	UL 864
7	Manual pull station	pcs	1	UL 38
8	Disablement switch	pcs	1	UL 864
9	Horn/Strobe	pcs	1	UL 1971
10	Alarm bell	pcs	1	UL 464
11	Relay	pcs	1	UL 508
12	Aerosol	pcs	4	UL 2775
13	Aerosol bracket	pcs	4	N/A
14	Hydrogen detector (H2)	pcs	2	UL 61010
15	Electric ventilation louver	pcs	1	UL 962
16	Exhaust fan	pcs	1	EN IEC 60079
17	Ventilation system emergency start/stop button	pcs	1	UL 508
18	Sprinkler	pcs	6	UL 199
19	Quick connector	pcs	1	H28
20	Installation accessories	Set	1	N/A

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